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ABSTRACT

Three areas of psychological research seem to hold implications for reading instruction. First, findings about the long-term effects of intrinsic and extrinsic motivation may be considered a challenge to popular technologies of instruction. Authors of highly structured systems, for example, tend to rely upon reinforcement to strengthen a child's newly acquired conceptual responses rather than to attend to competing spontaneous responses. The second area of research deals with the relative effectiveness of different word recognition strategies. The value of semantic and syntactic word recognition strategies and the kinds of exercises by which learners acquire them are reviewed. The third set of studies from which implications can be drawn deals with the comprehension of text material. There is a potential need, for example, for exercises which help learners create images during the reading process. (Author/AA)

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Research Directions and the Design of Reading Instruction

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Influential Studies of the Past

In 1961, David Russell named ten studies that, in his opinion, had the widest influence upon the kinds of materials to teach children to read.[1] Among these studies were those of Terman and Lima which called for selecting story content according to developmental changes in children's interests[2] and Gates' work on the construction and value of tests for diagnosing reading.[3]

Subsequently, Harry Singer selected both studies that have not had the impact upon practice which they should have had and studies which had a significant effect, but should not have had.[4] An example of the former was research showing low intercorrelations among scores for tests of main ideas, details, sequence, and other types of comprehension. Singer pointed out how the relative specificity of different comprehension tasks should be taken into account by teaching for these specific skills rather than aiming instruction at general comprehension or a narrow range of comprehension questions.

1 David G. Russell, "Reading Research That Makes a Difference," Elementary English, 38, 1961, 74-78.

2 L. M. Terman and Margaret Lima, Children's Reading. New York: Appleton, 1929.

3 Arthur I. Gates, The Improvement of Reading. New York: Macmillan, 1927.

4 Harry Singer, "Research That Should Have Made a Difference," Elementary English, XLVII: 1, January 1970, 27-35.

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An example of research judged to be influential but not justifiable by Singer was Cattel's study showing that readers could perceive meaningful sentences or words more rapidly than unrelated groups of letters or words. This finding based on adult readers was applied to instruction of beginning readers, ignoring the developmental changes in perception as individuals learn to read.

Research that Shapes our Current Designs of Materials

No concerted effort has been made to judge the studies that have had the great impact upon the design of materials for the teaching of reading during the present decade. I assume that such a selection would include practice emanating from the work of technologists such as Carroll[5], Bloom[6], and Skinner.[7] The consequences of their views can be seen in today's materials which feature: task analysis, specific objectives with matching criterion-referenced tests, sequencing of prerequisite tasks, prompting, relevant practice, confirmation of correctness of learner response or feedback, successful achievement on prerequisite tasks before proceeding and opportunities for learners to receive independently additional instruction when needed.

5 John Carroll, "A Model of School Learning," Teachers College Record, 64, 1963, 723-733.

6 Benjamin S. Bloom, "Learning for Mastery," Evaluation Comment, 1: 2, May 1968, 1-12.

7 B. F. Skinner, "The Science of Learning and the Art of Teaching," Harvard Education Review, 24, 1954, 86-97.

On the other hand, the selection would include the linguists and their popularizers, e.g., Chomsky[8], Fries[9], Goodman[10], and Smith.[11] The influence of the linguists can be noted in: more natural and childlike language in the preprimers, controlled spelling patterns rather than a controlled vocabulary in texts designed for learning the skills of decoding, and the use of systems of language signals to determine the meaning of what is written, e.g., patterns of word order, inflectional endings, context and redundency, and greater acceptance of the learner's own articulation and substitution of words.

Research Likely to Have an Impact on Future Instructional Systems

The studies I cite as most likely to have significant implications for the design of instructional materials share some common properties. First, they promise to correct deficiencies in present designs, particularly those designs based upon cumulative models of learning, prompting, and externally-administered reinforcements. Second, each study contributes to our understanding of a general phenomenon or problem even though it was conducted within the

8 Noan Chomsky, Aspects of the Theory of Syntax. Cambrindge: MIT Press, 1965.

9 Charles C. Fries, Linguistics and Reading. New York: Holt, Rinehart, and Winston, 1962.

10 Kenneth S. Goodman, "The Reading Process: A Psycholinguistic View," Language and Thinking in the Elementary School. New York: Holt, Rinehart, and Winston, 1970.

11 Frank Smith, Comprehension and Learning. New York: Holt, Rinehart, and Winston, 1975.

constraints of a particular instructional setting, population, and temperal condition. The studies are grouped under the related broad topics of motivation, developmental and emotional considerations, and constructive or generative reading.

Motivational Studies

Whereas many existing systems for the teaching of reading provide for feedback or knowledge of results and extrinsic rewards for achievement, future systems are likely to reflect studies indicating that feedback and extrinsic reward are less effective when learners are indifferent and not already committed to the task they are trying to achieve. Indeed the giving of rewards to students for participating and achieving a task may even reduce effort and affect for the task. William Notz has summarized studies bearing upon motivation and the negative effects of extrinsic rewards.[12] This research seems to suggest that when one perceives his behavior as stemming from his own choice, he cherishes its results; on the other hand, when he perceives his responses as stemming from external forces, his behavior and the results obtained are devalued. Although Notz cautions that our present knowledge in the area of the interaction effects of extrinsic and intrinsic motivation is incomplete, there is in his review sufficient evidence to show these future designers must consider whether their reading materials will provide for the learner to see himself as the initiator of what he is to learn

12 William W. Notz, "Work Motivation and the Negative Effects of Extrinsic Rewards," American Psychologist, September 1975, 884-891.

as opposed to engaging in the learning tasks because the teacher or parent demands it of him. An example of the kind of study upon which Notz based his conclusions is that by Kruglanski, Friedman, and Zeevi.[13] The latter investigation promised an interesting field trip to some high school students and not to others who had previously volunteered to participate in an activity. The non-contingent reward of a field trip produced a decrease in motivation, including loss of creativity, decreased enjoyment of the task, and less readiness to participate in similar activity in the future. One implication of such studies is that we must put more emphasis upon finding out how our instructional systems can help students become committed to personally significant goals in reading.

Developmental and Emotional Needs in the Design of Instruction

There are other studies which also bear upon the importance of attending to the perceptions and goals of the learner. Robbie Case, for instance, has indicated the need to expand Gagne's model by which the instructional designer maps out the hierarchical structure underlying an objective to be attained, determines which of the prerequisite skills or concepts the learner already possesses and then plans a series of activities that will lead the learner from his present position on the hierarchy to the terminal objective.[14] Case

13 A. W. Kruglanski, I. Friedman, and G. Zeevi, "The Effects of Extrinsic Incentives on Some Qualitative Aspects of Task Performance," Journal of Personality, 39, 1971, 606-617.

14 Robbie Case, "Gearing the Demands of Instruction to the Developmental Capacities of the Learner," Review of Educational Research, 45, Winter 1975, 59-87.

has presented illustrations of the consequences of making a priori or logical analyses of tasks without taking into account the developmental stages of learners. The ignoring of children's natural responses and instead focusing on correct responses, the rationale for them, the repeating of incorrect responses, and the rewarding of correct responses appears to be associated with less transfer and retention than instructional strategies that examine the child's errors for consistency, asking: "Is there a different question for which these answers would be correct?" If yes, one should redesign the task hierarchy so that it contains the response to the other question as well as opportunity to discriminate it from and link it to the correct one as perceived by the designer. In brief, Case argues for more attention to learning from the learner's point of view.

Psychologists are calling our attention to the importance of relating the cognitive aspects of learning to the deeper emotional needs of learners. Richard Jones, for example, draws on the work of Erik Erikson in maintaining that successful instruction requires a serious consideration of the emotional growth patterns of children.[15] By way of illustration, a child in the latency period (about 8 to 12 years) where the central growth crises is "mastery versus defeat" may use his new found skills in logical thought to reinterpret a long-standing conflict with one of his parents. To engage children's feelings in the content of learning may be a force for further cognitive

15 Richard Jones, Fantasy and Feeling in Education. New York: New York University, 1968.

learning. Hence, designers of reading materials in the future should take care to present content and learning tasks which bear upon the problems of greatest concern to learners.

Just as prior generations of textbook authors sought to place reading selections in a textbook series in accordance with studies reporting the interests of different age groups, future developers of materials might attend to both the emotional issues which are salient at particular stages of the life cycle and some underlying developmental model of organization thought such as the Piagetian stages. Designers of reading systems might try to match instruction with the learner's level of emotional need, his stage of intellectual development, and the desired competency in reading.

Parenthetically, if we can deal with a child's emotional need through instruction in reading, it will help satisfy a deficit in our ability to act upon the findings from motivational studies. These studies show the importance of the learner perceiving himself as making a choice of activity - of having a stake in the task - but give little direction as to how pupils learn to link their often unconscious goals, such as esteem and affiliation to the tasks of learning to read.

Constructive or Generative Reading

A number of research studies indicate the importance of instruction by which learners are stimulated to use their own experiences in constructing meaning from text. Wittrock and others have experimentally demonstrated enhancement of reading comprehension by stimulating learners to construct memories of their previous experiences and to generate one or more sentences

elaborating upon what was read.[16] The latter sentences represent what the text meant to each individual. An implication of these studies is that students should be taught (a) to use retrieval cues - words, sentences, paragraphs, headings - to stimulate the processing of information stored in memory and (b) to generate original sentences summarizing what is read.

Similarly, Singer reported gains in ability to comprehend text materials following instruction which he calls "active reading."[17] Essentially, active reading instruction is a procedure by which the student is taught to formulate his own questions which get a question in return. The reader learns to follow the thinking of an author, answer his own questions as he reads, and to store and retrieve answers. The procedure has been found useful at different grade levels. By way of example, at the kindergarten level when showing a picture, instead of directing pupils to answer a question such as "What is the boy doing in the picture?", children are asked, "What would you like to know about the picture?" The children's questions reflect their own experiences, perceptions, and cognition.

The generative model of reading comprehension is interactive. Higher order cognition processes, such as those used in deriving inferences from passages, may also relate to lower order processes, such as identifying

16 M. C. Wittrock, M. Doctorow, and C. Marks, Generative Processes in Reading Comprehension. Los Angeles: UCLA, 1977.

17 Harry Singer, "Theories, Models and Strategies for Learning to Read," in The Literature of Research in Reading with Emphasis on Models, Fred Davis, editor. U.S. Office of Education, 1970, 115-139.

unfamiliar words.

Investigators are now trying to establish the value of teaching children to use semantic and syntactic cues in word identification rather than rely upon phonics approaches to decoding. A recent study by McNeil and Donant, for example, supports the efficacy of children learning multiple word recognition strategies, indicating the value of a semantics strategy in determining unknown printed words characterized by irregular spelling patterns.[18]

Thus far, the kinds of research I see as likely to have an impact on future instructional systems can be characterized as having one common attribute: an emphasis upon the learner and the validity of his own purposes and background. In contrast with present procedures for instructional design which seem to regard the tasks of learning to read as the constant factor in the learner-task equation, future designers will give more attention to how the tasks of reading can best be varied in response to the learner's own concerns and perceptions.

There is, however, one final kind of study that should have an influence and which might also be consistent with the trend of trying to relate instruction to students. I refer to research upon work-related literacy skills. This interest has become a major focus of many in government. One of the best studies of this type is that conducted by the Human Resources Research Organization.[19]

18 John McNeil and Lisbeth Donant, "Transfer Effect of Word Recognition Strategies," UCLA, Los Angeles, 1977.

19 Thomas G. Sticht (editor), Reading for Working. Alexandria, Virginia: Human Resources Research Organization, 1975.

The HUMRRO research program gives us a better picture regarding the readability of job materials, the relations of job performance to readability, and the designing of materials to permit marginally literate persons to perform jobs satisfactorily.

More people spend more time at work-related reading than at any other type of reading. Yet schools typically allocate the overwhelming majority of their time to teach the reading of literature. There is a separation between those who teach reading and those who write the materials that persons read outside the school. Recognition of this gap may lead to design of instructional systems that will help learners achieve work relevant literacy skills.